Subject Index

Algebra
  cardinal, 156
  refinement, 156
Alexandroff topology, 150
$<\alpha$-bounded space, 74
antichain
  of group topologies, 43
  over X, 43
arc(s), 86

Baire sets, 112, 176
Baire space, 109, 115, 177, 181
Banach space, 13
Banach–Stone map, 13, 15
  adjoint map of, 15
Banach–Stone theorem, 12
base
  countable, 103, 177, 178, 181
  λ-, 84
  monotonically complete, 83
  of countable order, 79
  primitive, 80
$\beta\mathbf{X}$ (*see* compactification, Stone–Čech)
Borel sets, 112

C_p-theory, 18
C-space, 126
C*-embedding, 72
$C(X, Y)$ (*see* function space)
category
  Cartesian closed, 9
  edCHTOP (extremally disconnected compact Hausdorff spaces and continuous maps), 118
  edHTOP (extremally disconnected Hausdorff spaces and continuous maps), 118
  edTOP (extremally disconnected topological spaces and continuous maps), 35, 118
  Frm (frames and their homomorphisms), 29
  KHaus (compact Hausdorff spaces and continuous maps), 35
  KRFrm (compact regular frames and their frame homomorphisms), 35
  Loc (of locales), 31
  Sob (Sober spaces and continuous maps), 30
  SpFrm (spatial frames and their frame homomorphisms), 30
  Top (topological spaces and continuous maps), 1, 30
  UCon (uniform convergence spaces and uniformly continuous functions), 1
  Unif (uniform spaces and uniformly continuous functions), 1
CH (*see* continuum hypothesis)
chain, 149, 150, 154, 192
  (*see also* total order)
  of group topologies, 43
  maximal, 189
  over X, 43
chains of basic open sets, 86
charge, 158
circles, 86
cleavability, 18
  over a LOTS, 28
  over R, 19, 23
  over R^2, 28
  over R^n, 19, 24
  over R^ω, 19–21
co-meager set, 176
compact links, property of, 190
compact maximal chains, property of, 190
compact topological space 19–21, 23, 24, 26–28, 31, 52, 82, 92, 104, 131, 184
  almost locally, 105
  countably, 93, 133
  countably meta-, 63, 67
  E-, 52
  fiber, locally, 106
  hemi-, 108
  hereditarily, 134
  κ-, initially, 90
  locally, 99–103, 108, 109, 111, 182
  ortho-
    hereditarily, 136
    pre-, point-star, 134
  p-, 68
  para-, 84, 94, 131
    sub-, 63
  pseudo-, 39, 43, 47, 72, 112, 114, 182
    locally, 184
  real-, 52
  rim-, 102, 105
  σ-, 103, 111
  weakly locally, 106
compactification
  one-point, 99
  Samuel, 37
  Stone–Čech, 32, 39, 68, 72, 118, 185
compact-open topology (*see* function space)
complete space, 204
  $\aleph$-, 52
  Čech-, 84
  monotonically, 83
  quasi-, 84
  sieve-, 84

connected topological space, 23, 26–28, 39, 86, 194
  arcwise, 23, 87, 196
  locally, 39, 86, 87, 103, 108
    hereditarily, 26
continua, theory of, 26
continuous convergence (*see* convergence)
continuous mapping
  fiber open, 107
  induced function of a, 107
continuum, 27, 86, 104
  somewhere fat, 104, 109
continuum hypothesis (CH), 116
  generalized (GCH), 21, 47
convergence
  closed, 99
  continuous (*see* function space)
  of functions, 99
  Kuratowski, 99
  order (for a lattice), 188, 191
  product, 189
  of sequences of sets, 99
  of sequences of functions (*see* function space)
convergence space, 188
  ordered, 188, 191
    interval topology of, 189
  T_1-ordered, 189
  T_i-ordered, 189
  uniform, 2
convergence structure, 188
  uniform, 2
convex (*see* ordered topological space)
coreflective hull, 7
countable base, 103, 177, 178, 181
countable sum theorem, 64
cover(ing)
  $\aleph$-, 52
  locally finite, 54, 129
  open, 79, 129
  open normal, 51
  uniform, 52
covers
  sequences of, 79
cozero set, 13, 54, 112, 129
c-thick space, 26
  weakly, 26

Dedekind completion
  of an ordered group, 166
density of a metric, 53
dimension (uniform), 52
disjoint cozero set property, 13
divisible T_1-space, 125
Dugundji space, 185
dyadic space, 184

Essentially T_1-space, 80
Euclidean space, 18, 25

F_σ-set, 18
fiber base, 108
  countable, 108
first countable, 99, 108
forcing, 86
  ccc, 86
frame
  de Morgan, 35
  locally connected, 39
  spatial, 30
  uniform, 37
    completion of, 37
function
  with Baire property, 176, 181
function space
  Baire, 109
  Banach–Stone map of, 12
  compact-open topology on, 100, 102–105, 188, 192
  completely regular, 106
  completeness of, 109
  of continuous functions between topological spaces, $C(X, Y)$, 13, 99
    convergence spaces, $C(S, T)$, 188
  convergence in, 188, 190
    continuous, 103, 188, 190
    pointwise, 100, 103–105, 190
  Fell topology on, 99
  first countable, 108
  nonarchimedean Banach, 13
  regular, 106
functionally bounded set, 184
Functor
  adjoint on the right, 30

G_δ-
  dense subspace, 43, 47, 183
  diagonal, 20, 93
  point, 20
  set, 18, 47, 113, 185
gage, 54
γ-space, 95
GCH (*see* continuum hypothesis)
generic filter, 87
Gleason hull, 36
group
  Abelian, 43, 46, 72
  of bounded order, 46
  divisible, 46
  free, 44, 73
  ordered (*see* ordered group)
  Prüfer, 44
group topology(ies)
  (*see also* topological group)
  antichains of, 46
  chains of, 46
  finite index, 45

Haar outermeasure one, 114
Hahn–Banach theorem, 34, 168
Hahn product, 170
Hausdorff pseudocharacter, 90
Hausdorff space, 99, 105
hereditarily
  locally connected space, 26
  compact space, 134
  orthocompact space, 136
homogeneous topological space, 102, 194
  strongly locally, 194
  strongly n-, 194
homology theory, 24
homotopy theory, 24
hyperspace, 100

I-space, 126, 131, 189
  weak, 189
ideal lattice, 32
inequality
  Arhangel'skiĭ, 90
  Ginsburgh–Woods, 90
  Gryzlov's, 90
interval topology, 189
  new, 189
isometry, linear, 13

Jordan theorem, 24

k-cover, 108
κ-structure, 89

λ-base, 84
λ_b-space, 84
lattice of subsets, 58
  countably compact, 58
  disjunctive, 58
  I-, 60
  Lindelöf, 58
  prime complete, 61
  regular, 59
  replete, 60
lattice of topologies, 139
Lindelöf space, 60, 92
linear space
  nonarchimedean normed
  (*see* nonarchimedean normed linear space)
linear transformation
  bounded, 167, 170
  g-bounded, 167
linearly ordered topological space (LOTS), 26
link (*see* ordered set)
locally compact space (*see* compact)
locally convex space (*see* ordered space)
locally connected space (*see* connected)
locally finite
  ℵ-covering, 54
  cover, 129
  family, 182
  sum theorem, 64
locally functionally bounded space, 184
locally homogeneous space, 194

Manifold
  with boundary, 195
  compact, 24, 194
  connected and metrizable, 194
  n-dimensional, 24
mapping, one-to-one continuous
  vs. cleavability, 19, 20
meager set, 176
measure, 13, 111, 161
  cozero set of, 13
  Haar, 112
  Haar outer-, 111
  $\mathscr{L}$-regular, 58
  outer-, 59, 111
  pre-, 58
  σ-smooth, 58
  support of, 58
  0–1 valued finitely additive, 58
Menger and Moore, theorem of, 87
metric space, 51, 204
  (*see also* pseudometric)
  uniformly universal, 53
metrizable space, 19–21, 86, 100, 103, 132, 194
  completely, 87, 103, 195
metrization, 96
Michael line, 82
minimal topological properties, 138–148, 151–155

N-space, 128
Nagata space, 95
nest of sets, 165
nested topology, 141, 153
  partially, 146
net of subsets, 102
  topologically convergent, 103
network, 18
  weight, 18, 20
nonarchimedean norm, 164
nonarchimedean normed linear space, 163
  Cauchy complete, 169
  complete 165
  extension property of, 168
  immediate extension of, 166
  located subspace of, 167
    weakly, 167, 169
  maximally complete, 166
  pseudocomplete (p-complete), 165
  spherically complete, 165

nonarchimedean valued field, 13, 163
  complete, 13
nonmeager set (*see* second category)
nonmeasurable set, 111
norm (*see* nonarchimedean norm)
normal shrinkage of a collection of subsets, 53
normal space, 127
  ℵ-collectionwise, 52
  collectionwise, 125
  perfectly, 19
nowhere dense set, 111

Open cover (*see* cover)
order
  linear (*see* total)
  partial, 126, 148, 188
  pre-, 148
    Comfort, 68
    Rudin–Keisler, 70
  specialization, 134, 151
  total, 131, 149
    (*see also* chain)
order convergence (*see* convergence)
order-embedding of refinement algebras, 160
ordered convergence space (*see* convergence space)
ordered group, 163
  conditionally order complete, 170
  Dedekind completion of, 166
ordered set, 188
  link of, 189
  order-compatible subset of, 190
  order dense, 191
ordered topological space, 126
  convex, 126
  locally convex, 131
  lower topology of, 126
  normally, 127
  upper topology of, 126

p-point
  weak, of ω^*, 76
p-space, 172, 191
partial order (*see* order)
partially ordered set (poset), 86
  (*see also* ordered set)
  ccc, 86
perfect map, 78, 82
  quasi-, 78, 81
point(s)
  of discontinuity, 177
point-closure, 135, 139, 150
point-derived set, 139, 155
point-kernel, 139, 150
prebase
  of countable order, 80
    strong, 80
  monotonically complete, 84
preorder (*see* order)
preprimitive sequence (of covers), 79
preprimitive space, 80
  strong, 80
primitive base, 80
primitive sequence of covers, open, 79
principal topology, 139
principal ultratopology, 138
productive class
  countably, 28
pseudoarcs, 86
pseudometric, 53

Quasi-uniform space, 129
quasi uniformity, 127
  Pervin, 135

R^2, 86, 132
R^3, 86
R^n, 87
R^ω, 87
refinability
  $B(D, \omega_0)$-, 63
  θ-, 63
  weak θ-, 63
  weak $\overline{\theta}$-, 63
regular space, 31, 97, 106, 177, 181
regularly closed subset, 183
regularly open subset, 180, 183
Riesz's lemma, 167, 169
round o-filter, 118

SCH (*see* singular cardinals hypothesis)
Scott topology, 150
  bi-, 189
second category, 111, 116, 179
separable space, 22, 25, 86, 109, 204
sequential space, 133
set theory
  models of, 86
sets with the Baire property, 176
sieve, 83
σ-field, 112
Silver, theorem of, 47
singular cardinals hypothesis (SCH), 43, 47
skeletal map, 118
sober space, 30
  quasi-, 134
Souslinean space, 86
splitting structure, 1
  finest, 1
support of a measure, 58

T_0-topology, 140
  minimal, 143
T_1-space, 105
T_1-ordered topological space, 126
T_2-ordered topological space, 126
T_A-topology, 140, 145
  minimal, 147, 155
T_D-topology, 135, 140
  minimal, 143, 154
T_δ-topology, 140
  minimal, 144, 154
T_{UD}-topology, 140
T_ζ-topology, 140
  minimal, 145, 154
thread, 83
topological field
  big sets of, 173
  norm for, 172, 174
  p-adic topology for, 175
  with P-space topology, 173
  valuation for, 172
topological group
  compact, 43, 47, 111
  compact Hausdorff, 43
  compact normal subgroup of, 113
  compactly generated, 113
  connected, 116
  free, 71
  locally bounded, 182
  locally compact, 111, 182
  locally pseudocompact, 182
  metric, 111, 116
  minimally almost periodic (m.a.p.) 43
  non-Hausdorff, 42, 45
  p-compact, 68
  pseudocompact, 43, 47, 112, 115
  second category, 115
  σ-compact, 111
  totally bounded, 43–46, 69, 112, 182
  weight of, 47
    local, 46
  Weil completion of, 43, 69, 182
  zero-dimensional, 116
topological property
  expansive, 140, 154
  minimal, 138–148, 151–155
  universal, 69
topological ring, 172
  big sets of, 172
  bounded in a, 172
  locally bounded, 172
  nilpotent element of, 172
topologies on 2^X, 99
  Fell, 99
    (*see also* function spaces)
  Vietoris, 99
totally disconnected topological space, 26
transitive topological space, 136
Tychonoff space, 20, 23, 68, 100, 118

Uniform
  convergence space, 2
  covering, 52
  dimension, 52
  shrinkage of a collection of subsets, 53
  space, 52
    double weight of, 52
    universal, 52
uniformity, 1, 37, 51, 128
  (*see also* quasi uniformity)
  $\aleph$-, 51
  base for, 52
  gage of, 54
  Nachbin–Hewitt, 52
  splitting, 1
  Tukey–Shirota, 52
uniformly continuous function, 2, 51, 197
uniformly universal metric space, 53
universal topological property, 69

Valuation, 172
  nonarchimedean, 13, 163
  p-adic, 174

Wallman prime complete space, 57, 61
Wallman replete space, 57, 60
weak topology (of an order), 150

Z-space, 125, 136
zero dimensionality, 12, 28, 31, 116, 120
zero set, 112, 183
ZFC, 45–48, 86